PA 9T106

BRUYEVICH, N. G.

USSR/Errors   May 1947
     Mechanics, Applied

"On the Error in the Velocity Ratio of a Plane
Cam Mechanism," N. G. Bruyevich, 6 pp

"Izv Ak Nauk Tekh Nauk"   No 5

Geometric and algebraic treatment giving formulas
that may be used in determining the amount of
error in subject mechanism.

9T106

BRUVEVICH, N. G.

Makhanizmy dlya vypolneniya mate maticheskikh operatsiy. Tekhn. Entsiklop.
Ediya (2-e IZD.), T. 13, 66-91.

SO: Mathematics in the USSR, 1917-1947.
        Edited by Kurosh, A.G.,
        Markushevich, A.I.,
        Rashevskiy, P.K.
   Moscow-Leningrad, 1948

VAVILOV, S.I., akademik, otvetstvennyy redaktor; VOLGIN, V.P., akademik;
    redaktor; BRUYEVICH, N.G., akademik, redaktor; DEBORIN, A.M.,
    akademik, redaktor; LIKHTENSHTEYN, Ye.S., redaktor; PODGORNENSKAYA,
    TS.M., redaktor izdatel'stva; SHKOL'NIKOVA, S.A., tekhnicheskiy
    redaktor

[General meeting of the academy of sciences of the U.S.S.R. devoted
to the observance of the thirtieth anniversary of the Great October
Socialist revolution] Obshchee sobranie Akademii nauk SSSR posvia-
shchennoe tridtsatiletiiu Velikoi Oktiabr'skoi sotsialisticheskoi
revoliutsii; doklady, 23 oktiabria - 2 noiabria 1947 goda. Moskva,
1948. 718 p.   (MLRA 9:10)

1. Akademiya nauk SSSR.
        (Social sciences)   (Science)

KOVDA, V.A.; KOMAROVICH, M.A.; LIKHTENSHTEYN, Ye.S.; SEGAL, B.I.; VAVILOV,
S.I., akademik, redaktor; BRUYEVICH, N.G., akademik redaktor; BARDIN,
I.P., akademik, redaktor; VOLGIN, V.P., akademik, redaktor; DEBORIN,
A.M., akademik, redaktor; MINTS, I.I., akademik, redaktor; ORBELI,
L.A., akademik, redaktor; PODGORNENSKAYA, TS.M., redaktor izdatel'-
stva; SHKOL'NIKOVA, S.A., tekhnicheskiy redaktor

[220th anniversary of the Academy of Sciences of the U.S.S.R.: in
two volumes] 220 let Akademii nauk SSSR; v dvukh tomakh [Red.
kollegiia S.I.Vavilov i dr. Sost. V.A.Kovda i dr.] Moskva. Vol. 1.
1948. 430 p.
(MLRA 9:10)

1. Akademiya nauk SSSR. Yubileynaya sessiya, Moscow, 1945.
(Academy of Sciences of the U.S.S.R.)

BRUYEVICH, N. G.   PA 66T20

USSR/Academy of Sciences   Mar 1948

"Basic Results of the Scientific Activity of the
Academy of Sciences USSR in 1947," Academician N. G.
Bruyevich, Academician Secy, Acad Sci USSR, 9 pp

"Vest Ak Nauk SSSR" No 3

Summary of some of the more important contributions
made by the Dept of Physicomath Sci by solving 45
problems; Dept of Chem Sci, 31 problems; Dept of
Geol-Geog Sci, 36 problems; Dept of Biol Sci, 83
problems; Dept of Tech Sci with 36; Dept of Hist
and Phil with 42; and the Dept of Lit and Lang
with 33 solutions.

66T20

BRUYEVICH, N. G.

USSR/Academy of Sciences   Jan/Feb 1948
    Mathematics

"Requirements for Competition for Prize imeni P. L. Chebyshev for Best Work in the
Field of Mathematics," L. A. Orbeli, Vice-pres, Acad Sci USSR; N. G. Bruyevich,
Academician Secy, Acad Sci USSR, 1 p

"Izv Akad Nauk SSSR, Ser Mat" Vol XII, No 1

PA 41T2

BRUYEVICH, N. G.

USSR/Physics   Mar/Apr 1948
    Astronomy

"Conditions for the Prize imeni Bredikhin," S. I. Vavilov, Pres, Acad Sci USSR,
Academician N. G. Bruyevich, Secy, Acad Sci USSR, 1 p

"Astron Zhur" Vol XXV, No 2

This is 10,000-ruble prize offered for the best work in astronomy. Last date for
submission of works is 27 Nov 1948.

PA 65T98

BRUYEVICH, N.

Bruyevich, N., "Contemporary State of the Theory of Bombing." Symposium, In Honor of Soviet Science and Technology, Voyenizdat, Ministry of Armed Forces USSR, 1949.

BRUEVICH, NIKOLAI GRIGOR'EVICH

Raschet tochnosti mekhanizmov. (Vestn. Mash., 1950, no. 9, p. 5-12)

Includes bibliography.

Calculating the precision of mechanisms.

DLC: TN4.V4

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library
of Congress, 1953.

BRUYEVICH, N.G.

6016*   Basic Theory of the Precision of Mechanisms and
Basic Theory of Real Mechanisms. (In Russian.) N. G.
Bruevich. Izvestiia Akademii Nauk SSSR, Section of Technical
Sciences, May 1951, p. 722-741.
The above theories are discussed in detail. 16 ref.

1. BRUYERICH, N. G.

2. USSR (600)

4. Mechanical Engineering

7. Transactions of the Seminar of the Institute of Mechanical Engineering of the Academy of Sciences of the U.S.S.R., Department on the Precision of the Mechanisms and Machines. Trudy Sem po toch mash No 1 1952

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

1. BRUYEVICH, N. G.

2. USSR (600)

4. Machinery, Kinematics of

7. Errors of mechanisms with kinematic pitching pairs or with flexible, winding links.
   Trudy Sem po toch mash   No. 3   1952.

9. Monthly List of Russian Accessions, Library of Congress, ____April____ 1953, Uncl.

1. BRUYEVICH, N. G.,   GORODETSKIY, I. YE., Prof.,   STAYEV, K. P.

2. USSR (600)

4. Machinery - Standards

7. Problems in the field of scientific research and standardization work on interchange-
    ability, precision and technical measurements in machine building. Vest mash
    No. 1   1953

9. Monthly List of Russian Accessions, Library of Congress, _____April_____ 1953, Uncl.

BRUYEVICH N. G. (Acad)

Input and output of simple strutures from wich complicated mechanical and electrical systems are assembled.

paper read at the Session of the Acad. Sci. USSR, on Scientific Problems of Automatic Production, 15-20 October 1956
Avtomatika i telemekhanika, No. 2 p. 182-192, 1957

9015229

BRUYEVICH, N.G., (Moskva)

Present state and future development of scientific research on precision in machinery building and instrument making. Izv. AN SSSR. Otd. tekh. nauk no.6:144-156 Je '56.   (MLRA 9:9)

(Instrument industry) (Machinery--Construction)

AUTHOR: Bruyevich, N.G.

TITLE: On the Input and Output of Complex Analog-computer Networks
          (K voprosu o vkhodakh i vykhodakh slozhnykh ustroystv nepre-
          ryvnogo deystviya)

ABSTRACT: A study is made of mechanical and electric computers em-
             bodying the relationships set forth in a system of implicitly
             written equations. Concepts are expounded relative to the input
             and output of very simple computing elements which form part
             of larger computer networks. The author shows that to deter-
             mine the input and output of these very simple computing ele-
             ments it is necessary to analyze the total differentials of the
             equations describing the given relationships embodied in the
             computer mechanism. An investigation is made of the input
             and output of very simple computers which form part of more
             complex units for cases in which the latter directly compute an
Card 1/2   implicit function occurring in the lines of the simplest control

SOV/124-58-5-4998

On the Input and Output of Complex Analog-computer Networks

computers. Examples are given of analyses made of mechanical and electrical computer systems, and an account is included of experiments conducted to verify the results thereof.

I.I. Artobolevskiy

1. Mathematical computers--Performance   2. Mathematical computers--Analysis

Card 2/2

BRUYEVICH, N. G.

28(2)   PHASE I BOOK EXPLOITATION   SOV/1394

p 3

Akademiya nauk SSSR.   Institut mashinovedeniya

Voprosy sinteza i tochnosti slozhnykh ustroystv nepreryvnogo
   deystviya (Synthesis and Accuracy of Complex Mechanisms
   for Continuous Operation) Moscow, Izd-vo AN SSSR, 1958.   226 p.
   3,500 copies printed.

Resp. Ed.: Bruyevich, N.G., Academician; Ed. of Publishing House:
   Ioffe, D.M.;   Tech. Ed.: Golubeva, V.

PURPOSE: The book is intended for scientific research workers
   and engineers concerned with computers.

COVERAGE: This book is a collection of articles divided into two
   parts.   The three articles of the first part deal with the
   synthesis and accuracy of complex mechanisms for computers,
   functional investigation, inputs and outputs, methods of
   synthesis in solving implicit functions and accuracy of the
   process of manufacturing parts.   The second part of the book

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Synthesis and Accuracy (Cont.)   SOV/1394

contains seven articles dealing with the accuracy of some
particularly simple mechanisms: cams, gears, etc., and
their design for accuracy. The articles are based on ex-
perimental material which shows that the theoretical premises
and conclusions were confirmed by practical tests. The book
is based on scientific work carried out by the authors in
1955-56. The authors thank the following for reviewing the
book: N.Ye. Kobrinskiy, N.I.Pchel'nikov, and A.A. Fel'dbaum,
Professors and Doctors of Technical Sciences; B.G. Dostupov,
Docent, Doctor of Technical Sciences; T.A. Golinkevich,
A.I. Ivantsov, Yu.V. Lubatov, and I.F. Seregin, Docents,
Candidates of Technical Sciences; B.M. Tseytlin, Candidate of
Technical Sciences. The author also thanks Professor, Doctor
of Technical Sciences G.G. Baranov for assistance on problems
of simple mechanisms, and N.P. Ivannikov for working on the
second part of the book. There are 87 references, all Soviet.

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Synthesis and Accuracy (Cont.)   SOV/1394

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    a Universal Spindle
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    Three-dimensional (Conoid) Cam Mechanism
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    of Mechanisms With a Variable Ratio
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    Improvement by Means of Adjustment
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AVAILABLE: Library of Congress

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                                        5-11-59

Card 4/4

BRUYEVICH, N. G.

N. G. Bruyevich, "The Present State of Accuracy in Machine and Apparatus Construction."

paper presented at the 2nd All-Union Conf. on Fundamental Problems in the Theory of Machines and Mechanisms, Moscow, USSR, 24-28 March 1958.

SOV/24-59-4-8/33

AUTHOR: Bruyevich, N.G. (Moscow)

TITLE: Reliability and Accuracy of Automatic Production

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Energetika i avtomatika, 1959, Nr 4, pp 59-78 (USSR)

ABSTRACT: The first part of the review is a long general discussion of what is meant by reliability in various instances: complete absence of failure during use (aircraft engines); fail-free operation for a specified number of hours, followed by scrapping upon failure (most electronic components, some bearings, gears, etc.); and repair and overhaul after a specified number of hours without failure (crankshafts, grinding wheels, etc). Another aspect of reliability is the probable time required to repair a faulty instrument. The rest of the paper reviews briefly the criteria that have been applied to the various forms of accuracy and reliability, which form the subject of the latter 14 references (the first two references relate to fuller treatments of the subject by the author).

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BRUYEVICH, N.G.,
            P.3

SOV/179-59-5-41/41

AUTHOR: None given

TITLE: Third All-Union United Conference on the Automation of
            Manufacturing Processes in Machine — Building and
            Automatic Electrical Drives in Industry

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
            nauk, Mekhanika i mashinostroyeniye, 1959, Nr 5,
            p 184 (USSR)

ABSTRACT: The Conference was called during 12-16th May 1959, in
            Moscow by the Soviet Academy of Sciences,   the USSR State
            Planning Commission (Gosplan),   the State   Scientific-
            Technical Committee (Gosudarstvennyy nauchno-tekhnicheskiy
            komitet), the State Committee for Automation and Machine-
            Building   (Gosudarstvennyy komitet po avtomatizatsii i
            mashinostroyeniyu) and the USSR National Committee for
            Automatic Control (Natsional'nyy komitet SSSR po
            avtomaticheskomu upravleniyu). 800 Delegates took part.
            Academician Bardin, I.P. in his opening address noted the
            official policy of a broad adoption of automation in all
            fields of the National Economy as the decisive condition
            of further technical progress. Academician Dikushin, V.I.
Card 1/4   read a paper on the problems of the development of

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Third All-Union United Conference on the Automation of Manufacturing
Processes in Machine — Building   : and Automatic Electrical Drives
in Industry

automation in   machine — building   in the 1959-1965
period. The greatest significance is attributed to the
complete automation of processes with a large labour
content and heavy repetitive work and to the automation
of production. Mechanisation and automation must spread
into new fields of production. The integrated
development of powerful   machine — building   will make
it possible to increase the productivity of labour
continuously and without limit. Advanced production
processes must be more rapidly adopted. Renewal of
production plant must be carried out by its replacement
with better plant and more automatic plant and by
economically beneficial modernisation. Special
attention was paid by the lecturer to the press working
of metals. Research into deformation processes, the
stressed state and strength in the stamping of hot and
cold metals, especially metals of low ductility and heat
resistant metals must be accelerated. Concerning the
Card 2/4   problem of the continuity and automation of metal cutting

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processes, the lecturer pointed out that the creation
of improved machine tools for metal cutting will demand
more research into the stressed state, the deformation,
and the forces in metal cutting, into the increased life
of cutting tools, the development of methods of precise
forming and improved accuracy of cutting, the development
of automation schemes and automation equipment capable of
rapid re-setting or re-tooling when changing the design
of the components. Special attention was given by the
lecturer to the drive and control of machine tools.
The scientific and technical level of developments in the
field of drive and control achieved in the USSR will make
it possible to solve complex problems of the automation
of the entire operating cycle of a machine tool. However,
the lag in the manufacture of drive components and control
components prevent the wider development of automation.
Academician Bruyevich, N.G. read a paper on the safety
and accuracy in automatic production. Borisenko, I.I.,
engineer, gave a paper on the manufacture of electrical

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Processes in   Machine — Building   and Automatic Electrical Drives
in Industry

equipment, instruments and electrical means of
automation during the current 7-year plan.
Solodovnikov, V.V., Doctor of technical sciences,
presented a paper on the scientific foundations of
integrated automation. Academician Strumilin, S.G.
lectured on the economics of automation in industry.
About 150 papers were devoted to the automation of
manufacturing processes in machine
building. . They were divided into the following sections:
the automation of foundry processes, of press working
processes, of welding processes, of hard facing processes,
of assembly processes, of inspection processes and the
section on drives and controls in machine
building. , The conference also heard papers devoted to
modern problems of automatically controlled electrical
drives. Reported in Izvestiya Akademii nauk SSSR,
Otdeleniye tekhnicheskikh nauk, seriya "Energetika i avtomatika,"
1959, Nr 4).

Card 4/4

BRUYEVICH, N.G.

AUTHOR: None given   SOV/122-59-6-20/27

TITLE: Third All-Union Conference on Automation

PERIODICAL: Vestnik mashinostroyeniya, 1959, Nr 6, pp 71-73 (USSR)

ABSTRACT: The third national conference on the automation of
         production processes in mechanical engineering and auto-
         matically controlled electric drives in industry, held in
         Moscow from May 12-16, 1959, is reported. Over 1 100
         delegates from more than 66 towns of the USSR took part in
         the conference. 805 people assisted in the sessions dealing
         with the development of automation in mechanical engineering.
         The conference was opened by A.A. Blagonravov, Academician,
         Academic Secretary of the Section of Engineering Sciences
         of the USSR Academy of Sciences. Academician I.P. Bardin,
         Vice-president of the Ac.Sc.USSR, noted in his introductory
         speech the importance of the development of automation
         and dealt with the basic conditions determining successful
         automation of production processes. Academician
         V.I. Dikushin presented a paper entitled "Problems of
         Automatic Control in Mechanical Engineering" in which he
         stated that mechanical engineering had the task of providing
Card1/9 all branches of the national economy with improved machines.

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He emphasised the need for resolutely replacing obsolete
with modern machines. In order to increase the production
of machines and improve their quality, it was necessary to
carry out the overall automation of processes in all
production stages. Dikushin indicated the concrete trends
in the development of automtic control and dwelt on the
problems of the development of drive and control in their
interaction with production machines. Chilikin, M.G.,
Doctor of Technical Sciences, in his paper entitled
"Present-day Problems of the Automatic Electric Drive"
quoted the following figures on the relationship between
power available per worker and productivity of labour.
Taking 1928 in Soviet industry as the reference year, the
power available per worker rose to 335, 490 and 685% in
1940, 1950 and 1955, respectively. In the same years,
productivities were 341, 266 and 627%. Thus, questions
associated with the improvement of the electrical drive
assume great importance. Alongside the primary purpose
of the electrical drive – to convert electrical into
mechanical energy (rotating shaft power), research must be

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Third All-Union Conference on Automation SOV/122-59-6-20/27

directed towards the creation of industrial electrical
drives with translational, pulsating and other motions
changing according to any law. In a paper entitled "The
Reliability and Accuracy of Automatic Production"
Academician N.G. Bruyevich established the relationship
between the reliability of machine tools and the accuracy
of components made on them. He pointed out the case
without physical standstill of the machine, when it begins
to produce inaccurately. The serviceability of the machine
has been disrupted though it is still formally working.
To increase the reliability of machines, the possible
decrease in their accuracy must be taken into account
already in design. The reliability of the components must
be ensured and statistical information collected on the
reliability of machines in different conditions.
Academician S.G. Strumilin in a paper entitled "On the
Economics of Automation in Mechanical Engineering" gave
a historical analysis of the development of the automation
of production processes and defined the social and economic
differences in its effect under the conditions of
Card3/9   capitalist and socialist societies. N.I. Borisenko, in a

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paper entitled "Production of Electrical Equipment, Instruments and Electrical Automatic Control Gear" acquainted the audience with the increase in the production in these fields planned for the period 1958-1965. In his paper entitled "On the Scientific Foundations of Overall Automation", Doctor of Technical Sciences V.V. Solodovnikov, denoting the successive stages of automation, defined overall automation as the most general and highest form, in which not only the function of processing the control signals but also the function of evaluating them devolves upon the means of automatic control (i.e. the task of the control of a process which is automated throughout, should be solved by the means of computer engineering). The main difficulty in the fulfilment of this task is the complexity of obtaining a mathematical description of the production process. Another difficulty is the compiling of equations which will provide the link between economics and engineering. The speaker cited variants of the possible mathematical solution of the task

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of automatic control of processes which are automated throughout. At the Section for the Automation of Foundry Production Processes, papers were presented which reflected the development of the theory of foundry processes, the overall automation in the foundries and the development of new processes. At the Section for Automation of Press and Forging Processes, a paper was read on the prospects of the specialisation of the production of forgings in the USSR; several papers dealt with new automatic equipment, with the development of continuous processes of making forgings by overall automation on the basis of press working processes and the conditions for combining the processes of heat treatment and press working. At the Section for the Automation of Welding Processes, papers were presented dealing with new welding methods, welding metals by means of ultrasonics and the processes of cold welding. Several papers dealt with the experience in the automation of different branches of mechanical engineering and reported on new automatic control equipment. At the Section for the Automation of the Heat Treatment Processes,

Card5/9   papers were presented on the theory of heat treatment

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processes, on experience in the automation of heat treatment processes and methods of controlling them. At the Section for the Automation of Machining Processes, 23 papers were presented, which dealt with the development of automation in batch production of machines and with the standardisation linked with it; with the theory of processes, the measures for expanding production of automation equipment, new automatic devices and new model designs for pilot automatic factories. The Section on Automation of Assembly Processes had been established for the first time and, for this reason, the interest displayed in the work of this section was not fully satisfied. The papers and reports were, in the main, restricted to outlines of the experience of individual factories. In the Section on the Automation of Inspection Operations, over 20 papers were presented. They dealt with the theory of and new forms of equipment for the automation of inspection operations, descriptions of new methods of automating inspection operations. Several papers quoted experience in automation.

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At the Section on Drives and Controls of Engineering
Production Machines, theoretical papers were presented
on the principles of the design of systems with
maximising regulating properties, on the standardisation
of signals in information circuits, etc., as well as
papers on new equipment and methods for controlling machine
tools, on the electrical and hydraulic drives in mechanical
engineering, on new systems in pneumatic control devices,
and on several problems relating to mechanical trans-
missions. At the final full session a statement on the
tasks of the State Committee on Automation and Mechanical
Engineering was made by USSR Minister A.I. Kostousov,
Chairman of this committee, who defined the importance of
automation and its social significance. The principal
task - increasing labour productivity - is being fulfilled
by pursuing a specific policy in the design of machines
and raising the technical level of production processes.
The State Committee for Automation and Mechanical
Engineering has been set up for the purpose of co-ordinating
and organising the work of automation and for accelerating
Card7/9   the development of mechanical engineering. An extremely

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        mixed stock of manufacturing machines is in service
today. Newly produced machines are also extremely varied.
Altogether over 125 000 different types of machines,
instruments, apparatus, etc, are being produced in the
USSR. The primary task of the reconstituted State
Committee is the creation of a range of machines with as
small a number of types as possible, and most appropriate
to the scale and conditions of socialist production. All
machines must be so designed that they could be built
into automatic production lines. Problems of machine
design, the speaker stressed, must be solved with an eye
to overall applicability for all branches of mechanical
engineering. Kostousov then dealt with questions relating
to the general application and utilisation of industrial
experience in automation. A.Ye. Vyatkin, Chairman of
the Committee on Standards, Measures and Measuring
Instruments under the Council of Ministers of the USSR,
told the conference about steps taken in the field of
standardising components in mechanical engineering.

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Yu. Ye. Maksarev, Chairman of the State Scientific
Research Committee of the Council of Ministers of the
USSR, noted that the work of the conference and its
sections will assist the automation of production
processes in mechanical engineering.

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13,2920 (1344)1161)

25760
S/024/61/000/001/014/014
E035/E117

AUTHOR: Bruyevich, N.G.   (Moscow)

TITLE: An Investigation Into the Reliability and Accuracy of
            Electronic Elements in Machines and Instruments

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
            nauk, Energetika i avtomatika, 1961, No.1, pp. 185-200

TEXT: This is a revised version of a paper presented at the
All-Union Conference on Computer Mathematics and Computer
Engineering, November to December, 1959.
The multitude of possible causes of failure of electronic devices
can be grouped under two main headings: a) catastrophic
breakdowns, and b) the cumulative effects of small errors.
The overall reliability of a device is given by

(1)

$$P = P_{I.II} P_{III}$$

where $P_{I.II}$ is the reliability when only the possibility of
catastrophic breakdowns is considered, and P_{III} is the relia-
bility when the possibility of catastrophic breakdowns is ignored.
The expression is valid if the two classes of faults are

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An Investigation Into the Reliability and Accuracy of Electronic Elements in Machines and Instruments

independent.   In Section 1 of the paper the choice of component tolerances to achieve a given accuracy is dealt with. One particular case is analysed (the calculations were carried out by A.I. Il'in), namely the integrator shown diagrammatically in Fig.1. Errors can be produced by small changes in the values of R_1, C_1, A_1 (leakage conductance), zero drift, and the difference of the amplification factor K of the amplifier from ∞. The overall error in the output voltage can be expressed as:

$$\Delta U_{\text{вых}} = \frac{P_a}{C_0}\Delta A + \frac{P_b}{R_0^2 C_0}\Delta R + \frac{P_b}{R_0 C_0^2}\Delta C - \frac{(P_a + P_b)}{R_0 C_0}\frac{1}{K} + \frac{1}{R_0 C_0}\int_0^t e_{0p}d\delta + e_{0p}$$

$$P_a = (P_a)^0 - (U_{\text{вых}})_0^0\, t + \frac{1}{R_0 C_0}\int_0^t \left[\int_0^\tau U_{\text{вх}}d\tau\right]d\tau, \qquad (P_a)^0 = \left(\frac{\partial U_{\text{вых}}^0}{\partial a}\right)_0$$

$$P_b = (P_b)^0 + \int_0^t U_{\text{вх}}d\tau, \qquad (P_b)^0 = \left(\frac{\partial U_{\text{вых}}^0}{\partial b}\right)_0 \qquad\qquad (a)$$

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E035/E117

An Investigation Into the Reliability and Accuracy of Electronic
Elements in Machines and Instruments

where U_{BX} is the input voltage; U_{BbIX} is the output voltage;
a and b are two high-tension voltages applied to the amplifier.
A suffix of 0 indicates an ideal value, and an index of 0
indicates an initial value. The above formulae give a linear
approximation to the error produced by zero drift, which is
represented in the main formula by the last two terms.   These
formulae show that the error in the output voltage is a function
of the input voltage. The formula for output error can be used to
derive an expression which states the probability that the output
voltage will be within a given figure of the correct value, as a
function of time. This probability is also a function of the type
of input waveform, and tends to rise with rising frequency.
Fig.3 shows the probability that the output voltage will be within
0.5 volts of its correct value for three different input voltages.
The reliability of the integrator with regard to catastrophic
failure can be found by multiplying the reliabilities of each of
the separate components in it.
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25860
S/024/61/000/001/014/014
E035/E117

An Investigation Into the Reliability and Accuracy of Electronic
Elements in Machines and Instruments

In Section 2, 'duplication' of components is dealt with, i.e. the
effect of replacing single components by simple networks which
have the same electrical characteristics is considered. Examples
of such networks are shown in Figs. 6 and 7.   The assumption can
be made that each component is liable either to a short circuit
(the probability of this not occurring in a given period of time,
or the "reliability", being denoted P'), or to an open circuit
(the reliability of the component in this respect being called
P").   The networks in Figs. 6 and 7 can be analysed by
considering all possible combinations of these faults occurring,
and probabilities for each of the resultant states derived in
terms of the reliabilities P' and P".   It is found that the
likelihood that such a group of components retains its design
value is less than for a single component, but the probability of
its retaining some finite value is more.   This means that the use
of such groups in analogue devices which depend on their operation
on precise values of components would only lower the reliability
Card 4/7

25760
S/024/61/000/001/014/014
E035/E117

An Investigation Into the Reliability and Accuracy of Electronic
Element's in Machines and Instruments

of these devices; 'but in digital computing devices where the
actual values of components are not critical, the use of
component groups might well improve the overall reliability.
This hypothesis was tested experimentally, using two flip-flops.
One was built with standard components, and the other using
electrically similar component groups.   In both flip-flops, each
component was systematically short-circuited, and open-circuited,
and the effect noted. Nearly every one of these operations
prevented the conventional flip-flop from working; but the flip-
flop with component groups continued to operate in 64% of the
cases, at 150 kc/s, and about 50% of the cases at 300 kc/s.
The author concludes that the use of component groups in digital
devices leads to an increase in their reliability.
There are 12 figures, 8 tables and 7 Soviet references.

SUBMITTED: July 5, 1960

Card 5/7

27654
S/024/61/000/004/012/025
E140/E135

9. 7/00

AUTHOR: Bruyevich, N.G. (Moscow)

TITLE: The synthesis of digital computer control units

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh
             nauk, Energetika i avtomatika, 1961, No.4, pp.93-106

TEXT: The author explains his system for the design of
digital computer control units by means of a particular example -
the control circuits for a single-address, semisynchronous,
parallel machine with fixed point and 14 operations; semisynchro-
nous refers to the mode of operation in which individual steps of
a given instruction are of identical durations and clocked, while
the duration of the instruction depends on the number of steps.
The first step is to assemble the list of operations. The second
step is to break down the individual operations into a sequence of
steps, making as many steps common to each operation or group of
operations as possible. Steps include memory exchanges, computing
addresses of next instructions, handing over control to the
arithmetic control unit, etc. The article does not consider the
design of the latter. After this the logical equations for
Card 1/2

27654
S/024/61/000/004/012/025
The synthesis of digital computer E140/E135

realising the control unit are found. It is assumed that the
circuit is to be realised by the following elements: elementary
logical operators of sum and product, inverters, registers,
counters, switches, flip-flops. No considerations are given on
minimal solutions.
There are 4 figures, 2 tables and 4 references: 3 Soviet and the
following English language reference:
Ref.4: A.W. Burks, J.M. Copi. The logical design of an idealized
        general purpose computer. J. Franklin Inst., 1956, V.261,
        No. 3, 4.
SUBMITTED: April 28, 1961

Card 2/2

KOLMOGOROV, A.N., akademik; BRUYEVICH, N.G., akademik

Discussion of present-day problems in cybernetics (to be
continued). Tekh.mol. 29 no.11:30-33 '61.   (MIRA 14:11)
(Cybernetics)

BRUYEVICH, N.G.

Automation of mental work. Tekh. mol. 29 no.12:22-27 '61.

(MIRA 15:1)

(Cybernetics)

SORIN. Ya.; BRUYEVICH, N.G., akademik; GNEDENKO, B.V., akad.; SIFOROV,
V.I.; SOTSKOV, B.S.

Precise, strong and lasting. Znan.-sila 37 no.5:10-16 My '62.
(MIRA 15:9)
1. Predsedatel' komiteta Vsesoyuznogo soveta nauchno-tekhnicheskikh
obshchestv po nadezhnosti i kontrolyu kachestva (for Sorin).
2. Akademiya nauk Ukrainskoy SSR (for Gnedenko). 3. Chleny
korrespondent AN SSSR (for Siforov, Sotskov).
(Quality control)

BRUYEVICH, N.G. (Moskva)

Elements of the synthesis of the control devices of electronic
digital computers. Izv. AN SSSR. Tekh. kib. no.4:26-43
Jl-Ag '63.   (MIRA 16:11)

BRUYEVICH, N.G.; SERGEYEV, V.I. (Moscow)

"On the problem of accuracy in the reliability theory"

report presented at the 2nd All-Union Congress on Theoretical and Applied
Mechanics, Moscow, 29 January - 5 February 1964

BERG, A.I., akademik, red.; BRUYEVICH, N.G., akademik, red.;
GNEDENKO, B.V., akademik, red.; SHAMSHUR, V.I., red.

[Cybernetics in the service of communism] Kibernetiku na
sluzhbu kommunizmu. Moskva, Energiia. Vol.2. [Theory of
reliability and the queueing theory] Teoriia nadezhnosti
i teoriia massovogo obsluzhivaniia; sbornik statei. 1964.
367 p.   (MIRA 17:11)

1. Akademiya nauk SSSR (for Berg, Bruyevich, Gnedenko).

AM4036552 | BOOK EXPLOITATION   S/

Bruyevich, N. G.; Dostupov, B. G.

Principles in the theory of computers (Osnovy* teorii schetno-reshayushchikh
   ustroystv), Moscow, "Sovetskoye radio", 1964, 817 p. illus., biblio. Errata
   slip inserted. 15,500 copies printed.

TOPIC TAGS: automation, computer engineering, modeling computer, digital computer,
combined computer

PURPOSE AND COVERAGE: The book examines the fundamentals of the theory of accuracy
and reliability, principles of construction, and the operation of modeling, digital,
and combined computers. Circuitry analysis is done considering the most important
requirements of specialized computer assemblies. The book is intended for research-
ers and engineers working in computer engineering.

TABLE OF CONTENTS [abridged]:

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AM4036552

Card 2/32

S/0179/64/000/002/0078/0081

ACCESSION NR: AP4035061

AUTHOR: Bruyevich, N.G. (Moscow); Sergeyev, V. I. (Moscow)

TITLE: Problem of precision in reliability theory

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 2, 1964,
78-81

TOPIC TAGS: precision, reliability, machine, reliability theory, machine
reliability

ABSTRACT: The reliability of a machine is defined as its ability to operate
and perform its intended purposes for a given number of hours. Lack of.
reliability in a machine of device can occur as a result of one or several
rough primary errors due to breakdown in parts or from the concurrent effect
of several slight primary errors. Depending on the purpose of the machine,
the error in the output coordinant can be expressed as an error of position
or displacement or an error in velocity or acceleration. It is very import-
ant in solving the second problem in the theory of reliability(i.e. that
the output signals lie within given tolerances) to study the precision with

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which links of the mechanism were made and the methods developed in the
theory of precision for obtaining the error in the output signal or output
coordinate as a function of the primary errors through use of the mechanism
for a mechanism with one guided link. The results of the article are
illustrated by an example of a three link screw mechanism.

ASSOCIATION:none

SUBMITTED: 24Dec63   DATE ACQ: 20May64   ENCL: 00

SUB CODE: IE   NO REF SOV: 005   OTHER: 000

Card 2/2

BRUYEVICH, N.G., akademik, otv. red.; AKSEL'ROD, P.S., red.

[Precision and reliability of automatically controlled
manufacture of machinery] O tochnosti i nadezhnosti v
avtomatizirovannom mashinostroenii. Moskva, Nauka, 1965.
137 p.   (MIRA 18:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut ma-
shinovedeniya.

BRUYEVICH, N.G. (Moskva); SERGEYEV, V.I. (Moskva)

Nonlinear theory of the precision of mechanisms with lower
kinematic pairs. Ft.1. Mashinovedenie no.2:3-12 '65.

(MIRA 18:8)

BRUYEVICH, N.G. (Moskva); SERGEYEV, V.I. (Moskva)

Nonlinear theory of the precision of mechanisms with lower
kinematic pairs. Pt.2. Mashinovedenie no.3:3-11 '65.

(MIRA 18:6)

BRUYEVICH, N.G. (Moskva)

Problems of the automation of brainwork in the manufacture of machinery. Mashinovedenie. no.5:3-13 '65.   (MIRA 18:9)

BRUYEVICH, N.G.; SERGEYEV, V.I.

Some general problems of the precision and reliability of units.
Teor.mash.i mekh. no.105/106:135-156 '65.

(MIRA 18:4)

L 32765-66   JT

ACC NR: AP6010123   SOURCE CODE: UR/0122/66/000/003/0003/0008

AUTHOR: Bruyevich, N. G.(Academician)

ORG: None

TITLE: Essential problems in the automation of mental work in machine building

SOURCE: Vestnik mashinostroyeniya, no. 3, 1966, 3-8

TOPIC TAGS: computer application, industrial automation, cybernetics

ABSTRACT: The author surveys, on the basis of 11 Soviet and Western references, the present status of automation of mental work in machine building. The author discusses separately 1) the numerical calculation of mathematical problems during scientific studies and during machine design; 2) the search for optimum solutions and the development of optimum versions of new machines, equipment, and technological processes; 3) the development of new methods of scientific investigation based on computer technology; 4) the modeling of processes on digital computers using the Monte Carlo method; 5) logical analysis and synthesis of control devices; and 6) the production of drawings of parts and units using computer technology.

SUB CODE: 09, 13 / SUBM DATE: none / ORIG REF: 006 / OTH REF: 005
Card 1/1

BRUYEVICH, N.I.

Plan of the Geodetic Literature Publishing House for 1956-57.
Geod. i kart. no.9:74-78 N '56.   (MIRA 10:1)
                        (Geodesy)

BAGRATUNI, G.V.; BOL'SHAKOV, N.N.; BRUYEVICH, N.I.; BUBNOV, I.A.;
GRAMENITSKIY, D.S.; IZOTOV, A.A.; MAZMISHVILI, A.I.; MODRINSKIY,
N.I.; SALYAYEV, S.A.; FLORENT'YEV, V.B.; FOMIN, P.M.

Nikolai Fedorovich Bulaevskii; obituary. Izv.vys.ucheb.zav.;
geod.i aerof. no.6:121-122 '61.   (MIRA 15:3)
        (Bulaevskii, Nikolai Fedorovich, 1882-1961)

KHRENOV, Leonid Sergeyevich, prof.; Prinimal uchastiye ZAPRUDNOV, B.D., inzh.; KAMENEV, N.P., dots., ofitsial'nyy retsenzent; SHAROV, I.F., ofitsial'nyy retsenzent; BRUYEVICH, N.I., nauchnyy red.; LYAKHOVICH, Ye.A., red.; SHIBKOVA, R.Ye., tekhn. red.

[Geodesy] Geodeziia. Izd.2. Moskva, Goslesbumizdat, 1962. 476 p.
(MIRA 16:6)

1. Vsesoyuznyy zaochnyy lesotekhnicheskiy institut (for Kamenev). 2. Khrenovskiy lesnoy tekhnikum (for Sharov).
(Geodesy)

BRUYEVICH, N.V.; BREYTMAN, Z.M.

        Checking contact angles of radial-supporting bearings. Izm.tekh.
        no.3:2-4 Mr '60.   (MIRA 13:6)
               (Bearings (Machinery)--Testing)

BRUYEVICH, N.V.; BREYTMAN, Z.M.; REZNIKOV, Yu.M.; MIKHAYLOV, N.V., inzh., retsenzent; KURATTSEV, L.Ye., red.; GORDEYEVA, L.P., tekhn. red.

[Technical measurements in the bearing industry] Tekhnicheskie izmereniia v podshipnikovoi promyshlennosti. Moskva, Mashgiz, 1963. 198 p.   (MIRA 17:2)

BRUYEVICH, P.N., insh.

Method for approximate determination of inclination angles of gently sloping terrains from near-vertical aerial photographs. Izv. vys. ucheb. zav.; geod. i aerof. no.6:109-112 '60.   (MIRA 14:5)

1. Stereofotogrammetricheskaya laboratoriya Instituta geografii AN SSSR.
                        (Aerial photogrammetry)

L 04932-67   EWT(1)   GW

ACC NR: AP6028220   (A)   SOURCE CODE: UR/0154/66/000/001/0085/0088

2 4

AUTHOR: Bruyevich, P. N.

ORG: Moscow Institute of Engineers of Geodesy, Aerial Photography, and Cartography
(Moskovskiy Institut inzhenerov geodezii, aerofotos"yemki i kartografii)

TITLE: Certain calculations of the parameters of ground stereophotogrammetric survey for
compiling frontal plans of steep areas

SOURCE: IVUZ. Geodeziya i aerofotos"yemka, no. 1, 1966, 85-88

TOPIC TAGS: stereoscopic photography, photogrammetry, geodetic survey

ABSTRACT: Experience in ground stereophotogrammetric survey to compile frontal plans of
steep areas, i.e., plans projected on a vertical plane, has shown that the magnitudes of the
angles between the direction of the observation base and the plane of projection parallel to the
trend of the steep area rarely exceeds 25°. With an increase in the angle of deviation of the
optical axis from the normal to the base the errors of determining the spatial coordinates of
the points of the steep decline increase appreciably, therefore it is necessary to avoid angles
of deviation of more than 25°. In the formulas derived in this article the distance from the

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L: 04932-67

ACC NR: AP6028220

surveying points to the photographed steep decline are taken to be maximal for the following considerations. The measurement conditions will be worse for points of a steep decline most remote from the photographing station, in other words the angle of the photogrammetric intersection will be smallest. For other points the angles of intersection will be larger in magnitude. Photographing of the steep decline in all the examined conditions was done on photographic plates, the planes of which at the moment of exposure were parallel to the trend of the photographed area. Therefore, the fluctuations of differences within the stereoscopic pair will be relatively small and the image of the steep decline on the photographs will not be divided into near and far plans. Consequently there is no danger of obtaining overlappings of less than 50% at points with smallest distances. Other relationships obtained in this work permit a thorough execution of preliminary reconnaissance during field work on ground stereophotogrammetric surveying to compile frontal plans, which increases the effectiveness of field operations. Orig. art. has: 11 formulas and 2 figures.

SUB CODE: 08/   SUBM DATE: 04Oct64

kh

Card 2/2

BRUYEVICH, S. V.

The Hydro-chemistry of the Kaspian Sea, 1934

~~SO: AT 1-166-52, Germany, 4 February 1952.~~

Rapid potentiometric determination of minute amounts of chlorides. S. V. Brucvich and P. K. Varfolomeeva. *J. Applied Chem.* (U. S. S. R.) **8**, 366-72(in English 373)(1935).—The titration of small amts. of Cl in dil. solns. without concg. was carried out potentiometrically by the Treadwell method, with the Cl-Ag electrode. The largest errors were: for concns. not below 2.5 mg. Cl/l. 1.2%, for those not below 0.5 mg. Cl/l. 12.4%. This method is compared with that of Mohr and the latter is found to be less accurate. In the potentiometric detn. of small amts. of chlorides a difference in the acidity of the standard and the soln. under investigation amounting to 20 mg. equiv. of acid, an addn. of Fe^{++} or Fe^{+++} up to 20 mg. of Fe per l., addn. of humic substances up to an American color scale of 300°, or addn. of $CaSO_4$ and $MgSO_4$ corresponding to 1000 and 1500 mg. per l. did not affect the results of the titration. This method can be applied directly for Cl detn. in natural waters.   A. A. B.

BRUYEVICH, S. V.

Estimation of the Orgainc Matter Production in the Caspian Sea, 1936.

~~SO, ATI-166-52, Germany, 4 February 1952.~~

Hydrochemistry of the central and southern parts of the Caspian Sea. (According to the 1934 investigations.) S. V. Bruevkh. *Trudy Kompleksnomu Izucheniyu Kaspiiskogo Morya* 1937, No. 4, 3?2 pp.; *Khim. Referat. Zhur.* 1938, No. 6, 65-6; cf. C. A. 31, 6778.—The hydrological regime of the Caspian Sea is described, and particularly the distribution of Cl according to the sea depth, in various parts of the sea and in relation to changes of the Cl content in different seasons. Analyses of the water are given. The magnitude of the Cl coeff. (the ratio of the sum of the ions to the wt. content of Cl/kg. of water) was found to be equal to 2.396 which is close to the values obtained by a no. of other authors. By using the method of Jolly (for the detn. of the age of the ocean) for the detn. of the age of the present day Caspian Sea a value of 11,000 years was obtained which does not differ by more than 30% from the true value. The annual decrease of the salt content from the outflow of the salts in the water into Kara-Bugaz-Gol Bay is 0.0024%. The pH values are smallest in summer. From the pH values the vapor pressures of free CO₂ for various parts of the Caspian Sea are calcd. according to Buch (cf. C. A. 32, 6114⁹). The pCO₂ values for the central Caspian are slightly higher in winter than in summer, and they are considerably greater in summer for the southern Caspian. This phenomenon is explained by the great effect of the temp. on the equil. which is related to CO₂. In all cases the pressure of CO₂ in water was greater than in the atm., i. e., there was a const. evolution of CO₂ into the atm. during all seasons of the year. Sources for covering this deficit of CO₂ are the inflowing waters which add 2.44 X 10⁵ tons of CO₂ and org. substances annually. The const. supersatn. of CaCO₃ in the regions of southern Caspian and the Krasnovodsk Bay was proved experimentally. The distribution in the Sea of O, H₂S, NH₃ salts, nitrates, phosphates and silicic acid is discussed. The vertical distribution of nitrates is characteristic of the Caspian Sea. Several vertical zones were detd. The 1st zone, poor in biogenic elements, is 0-100 m. In the lowest zone an accumulation of the biogenic elements was observed. The 1st zone is divided into the photosynthetic (up to a depth of 25-60 m.) and the nitrate subzones. In order to det. the production of org. substances there were performed observations of the daily variations of pH and O. The calcn. of the production of org. substances were made from the daily production of O detd. from the difference between the daily max. and min. of O (i.e. of O corresponded to 1.34 mg. of glucose). For the southern Caspian the production of the org. substances varied from 0.30 to 2.5 mg./l. of glucose, and for the northern Caspian it was from 0.10 to 3.65 mg./l. of glucose.   W. K. H.

CA

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Determination of nitrates in fresh water by the diphenyl-amine method. S. V. Bruevich, and E. S. Bruk. *J. Applied Chem.* (U.S.S.R.) 10, 2144–52 (in German 2152) (1937); cf. Troimov, *C. A.* 30, 7736⁴.––The color produced in water by humic substances decreases the accuracy only in the presence of a very small amt. of nitrate. For the usual analytical detn. the coagulation of water, having color 200° (Pt-Co scale), is not necessary. The presence of considerable amts. of ferrous ion retards development of the blue color; Fe should be sepd. by coagulating water with Al₂(SO₄)₃ and alkali, if more than 5 mg./l. is present. Nitrite interferes if the amt. of nitrate in water is large, i. e., 0.4–5.0 mg./l. The coagulation of colored humic water with Al₂(SO₄)₃ and alkali decreases the nitrate content and, therefore, the coagulation should be carried out only when the error due to color and the presence of ferrous ion is greater than the error due to the coagulation (30%). Artificial standard solns. (for color comparison) can be prepd. by mixing 1% indigocarmine aq. soln. with 10% CoSO₄ soln. in various proportions. Eleven references.   A. A. Polgorny

PROCESSES AND PROPERTIES INDEX

The determination of iodine in the natural waters of Moscow. S. V. Hunwich and O. P. Oparina. *Hydrochem. Material.* (U. S. S. R.) 10, 230-41 (in German 242) (1938).—H_2O from the Rublevo distributing system contains no I, but H_2O from the Mytischin system contains 3.4 γ/l. and from the Moscow river, 17 γ/l. H_2O from artesian wells contains 8-11 γ/l.   H. M. Leicester

ASM-SLA   METALLURGICAL LITERATURE CLASSIFICATION

Determination of the organic and inorganic phosphorus in natural waters. S. V. Brujević and A. A. Kostromina. *J. Applied Chem.* (U. S. S. R.) 11, 682 (in French 683)(1938).—Detailed directions are given for detn. of phosphate by the method of Kalle (C., A. 31, 6718⁹). The error in detn. of total P is about 3.4%. For the detn. of sol. mineral and org. P filter the water (without previous acidification) then acidify with 2 cc. of H₂SO₄ per 100 cc. of water and allow to stand before carrying out the Kalle detn. For the detn. of sol. mineral P, filter but carry the analysis in the same day without digestion. For the detn. of total insol. P (suspended) add 2 cc. of H₂SO₄ per 100 cc. of water and allow to stand overnight. For the detn. of total mineral P treat the sample with α-dinitrophenol, neutralize with NH₄OH to a yellow coloration, add 1 cc. of 10% H₂SO₄, dil. to the mark (100 cc.) and compare colorimetrically. Thirteen references.
                                                A. A. Pevkovits

PROCESSES AND PROPERTIES INDEX

Oxidation-reduction potential and the p_H of sediments of the Barentz and Kara seas. S. V. Bruevich. *Compt. rend. acad. sci. U.R.S.S.* 19, ____ (in English); cf. preceding abstr. The origin of the brown oxidized sediments seems to be connected with an accumulation of ferric and higher Mn oxides which owe their formation to the weathering of the mineral material brought by the sea. The essential conditions are the rich O resources of the sea and the small amt. of org. remains falling to the bottom. The thin brown materials are underlain by greenish and bluish gray muds. Spitzbergen is surrounded by yellowish grey sandy muds with no brown film. The lower, packed layers of the brown muds have apparently been reduced by the org. matter when contact with the O-contg. water was decreased. Mn^{++} compds., owing to greater soly., passed more largely to the upper layer than those of Fe^{++}. The brown sediments, with considerable MnO_2 content, have higher reduction-oxidation potentials than the bluish gray types; the latter, in turn, are higher than the Spitzbergen type. The av. p_H of the near-bottom waters is 8.10, the mud surface is more acid, the low layers are predicted to be more basic.   D. W. Pearce

METALLURGICAL LITERATURE CLASSIFICATION

Accumulation of biologically important elements (nutrient salts) in mud water of fresh-water basins. S. V. Brucvich, R. M. Pevzniak, V. L. Ponizovskaya and M. A. Sibiryakov. (Compt. rend. acad. sci. U. R. S. S. 21, 282-6(1938) (in English).—The surface and bottom layers and 3 mud layers (25, 50 and 75 cm.) of Lake Biserovo near Moscow were analyzed during each of the 4 seasons of 1936-7 for the following chem. components: alky. (gross and cor. for NH_3), pH, percentage of O_2, nitrate N, nitrite N, ammonia N, org. N, phosphate, org. P, org. N/org. P, Si, FeO, Cl and the O consumed from permanganate. A considerable accumulation was observed in the mud suspension, increasing with depth, as compared with the bottom waters except for O_2, nitrate N, partly nitrite N, phosphate and sulfates. The detailed changes with the seasons are also described.   C. K. Horner

CA

II A

Distribution and dynamics of living matter in the Caspian Sea. S. V. Bruevich. *Compt. rend. acad. sci. U. R. S. S.* 25, 138-41 (1939)(in English).—The amts. of bacteria, phytoplankton, zooplankton, zoobenthos, phytobenthos, and fish in the Caspian are estd. on the basis of existing data and the figures tabulated in terms of wet and dry wt., N and P content. On the dry-wt. basis the relation between the biomasses of zoobenthos, fish, zooplankton and phytoplankton is 2.5:1:0.25:0.2. The percentages of the annual production of living matter (exclusive of bacteria) are: phytoplankton 75, zoobenthos 13, zooplankton 11, fish 0.7, phytobenthos 0.3 and marine animals 0.005. 6 references.   A. H. Krappe

All-Union Scientific Res'ch Inst. of Sea Fisheries and Oceanography (VNIRO), Moscow, c1949-.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

PROCESSING AND PROPERTIES INDEX

2

Changes in the chemical composition of the Caspian Sea during the period of receding water level (1933-7). S. V. Bruevich—Izvest. Gosudarst. Geograf. Obshchestva 71, 79-828(1939); Khim. Referat. Zhur. 1940, No. 5, 27-8.—During the period 1933-6 there was an increase of 0.29% in the Cl concn. in the upper 100-m. layer of the southern part of the Caspian Sea; the calcd. loss of water during the period was 0.45%. The content of O in 1937 was slightly different from the O concn. in the previous years. The peculiarities of the compn. of the water in 1937 were due not to the decrease in the sea level, but to the temp. and the phytoplankton activity. The summer pH values for the 25-50-m. layer in the central and southern part of the Caspian Sea increased from 8.43 to 8.59 during the 1933-7 period. This increase was parallel to the increase of the salinity. The CO₂ pressure decreased substantially during the summer period from 1933 to 1937; this was caused by increase of the phytoplankton activity, which accompanies the increase in salinity. Nitrates, nitrites, phosphates and SiO₂ follow a systematic course with the increase of the salinity in the central and southern parts of the Caspian Sea. The content of the other components depends more on the peculiarities of the growth of phytoplankton.   W. R. Henn

METALLURGICAL LITERATURE CLASSIFICATION

CA

Accumulation of biogenic elements in the sediment solutions of the North Caspian, according to the character of the bottom deposits. S. V. Bruevich and E. O. Vinogradova. Compt. rend. acad. sci. U. R. S. S. 27, No. 6 875-8(1940)(in English).—Chem. data show the compn. of various bottom deposits. Vertical distribution of salinity and of biogenic elements in the sediment solutions of the North Caspian. Ibid. 879-81.—Many chem. data are tabulated.   Walter H. Seegers

BRUYEVICH, S. V. and ANICHKOVA, N. I.

"The Chemistry of River Discharge into the Caspian Sea," _Trudy po Kompl Izuch Kasp Morya_, No 14, Izd AN SSSR, 1941.

BRUYEVICH, S.

"Distribution of Matter among the Several Groups of Organisms in the Caspian Sea.
Elements of the Chemical Balance of the Caspian Sea," Tr. po kompleksn. izuch. Kaspiyskogo
morya /Papers on the Combined Study of the CAspian Sea by Workers in Various Specialties/,
No 14, p 76, 1941.

BC

Water content in bottom deposits of the Caspian Sea. S. V. Bruievich. (Compt. rend. Acad. Sci. U.R.S.S., 1945, 67, 286—389).— The H₂O content of natural marine sediments is intimately related to the mechanical composition of the sediments: the highest H₂O content corresponds with the finest mechanical composition (muds, clays); the lowest, with sands. Depth and local features of the H₂O body have no influence on H₂O content in the upper layer of ground if this is a mud or clay. The vertical H₂O distribution depends solely on the mechanical type of the sediment. Evidence of ancient clay deposits in the Apsheron submarine gutter has been obtained.   D. S. P.

A3a-3LA   METALLURGICAL LITERATURE CLASSIFICATION

CA

No.9,

General features of sedimentation in the Caspian Sea (according to the distribution of carbonates, iron, manganese, and phosphorus in sea deposits). S. V. Bruevich and K. G. Vinogradova. *Compt. rend. acad. sci. U.R.S.S.* 32, 789-92(1941); cf. C.A. 41, 2130g.—Bottom deposits of the Caspian Sea originate from fluvial and eolian sources, and pptn. Pluviogenic sediments, low in carbonates and high in Fe, Mn, and P, predominate in the western and central parts; in the eastern parts, eolian and pptd. sediments predominate with high carbonates (4 times), and low Fe, Mn, and P (one-third). Detailed tables are given.   Marjorie Hooker

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Carbonates in the bottom deposits of the Caspian Sea.
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measurements of fluvial carbonates discharged into the
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4619⁴, 6141⁹), has revised the old analyses; the figures ob-
tained are tabulated and discussed. Sources and types of
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Inorganic elements in the sediment solutions of the northern, middle, and southern parts of the Caspian Sea. S. V. Bruevich and E. G. Vinogradova (Inst. of Marine Fisheries and Oceanography, Moscow). Compt. rend. acad. sci. U.R.S.S. 54, 419-22(1946)(in English); cf. C.A. 34, 7670⁴.—The salinity and nutrient salt content of sediment solns. are higher than that of adjacent bottom waters. Muds contain more nutrient salts than other, more readily penetrated, bottom deposits. The H₂S content of sediment solns. in the Krasnovodsk gulf depends on the amount of org. matter deposited and decreases to zero in the depths of the sea. The amount of oxidizable org. matter in sediment solns. is small; the oxidizability is equiv. to 6-18 mg. O per l. No B accumulations are found in sediment solns.   H. R. Wirth

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"The Chemical Composition of Sediment Solutions of
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ence between sediment solutions of bay and those of
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LC   54T57

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sediment solutions and physical and chemical composi-
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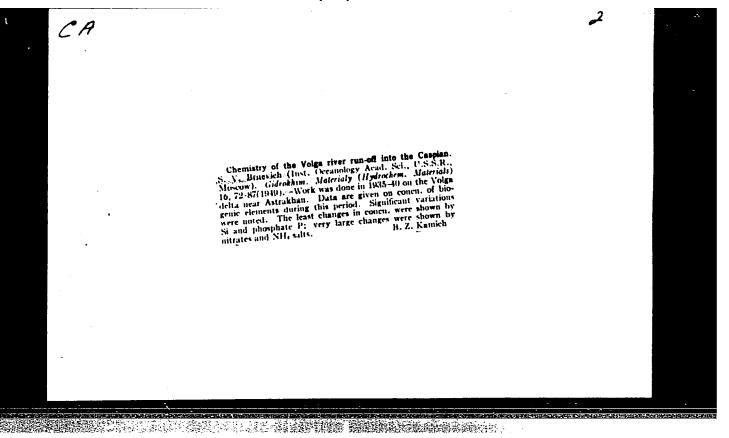SO: U-4110, 17 July 53, (Letopis 'Zhurnal 'nykh Statey, No. 19, 1949).

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sedimentation, precipitation of carbonates, and
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USSR/Oceanology (Contd)   Jan/Feb 49

middle and southern Caspian, and for Kaydak and
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Compares determinations of sedimentation speed
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